

## Claims

1. An aqueous dispersion of a block copolymer comprising a polyadduct or polycondensate (polymer I for short) on one hand and a polymer obtainable by free-radical addition polymerization (polymer II for short) on the other, wherein
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- polymer I is obtainable by reaction of its starting compounds in miniemulsion,
  - one of the starting compounds of polymer I is an initiator of free-radical addition polymerization, and
  - 10 - polymer II is prepared in the presence of said initiator.
2. The aqueous dispersion according to claim 1, wherein polymer I is a polyurethane and the corresponding starting compounds are isocyanates and isocyanate-reactive compounds.
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3. The aqueous dispersion according to claim 2, wherein the initiator comprises azo compounds containing at least one isocyanate group or one isocyanate-reactive group.
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4. The aqueous dispersion according to one of claims 1 to 3, wherein the amount of the initiator as starting compound for polymer I is from 0.1 to 10 parts by weight per 100 parts by weight of polymer II.
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5. The aqueous dispersion according to one of claims 1 to 4, wherein the amount of polymer I is from 5 to 95% by weight, based on the block copolymer.
6. The aqueous dispersion according to one of claims 1 to 5, wherein the polyurethane as part of the block copolymer has been synthesized from
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- a) polyisocyanates,
  - b) polyols of which
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- b<sub>1</sub>) 10 to 100 mol%, based on the total amount of the polyols (b), have a molecular weight of from 500 to 5000 g/mol,
  - b<sub>2</sub>) 0 to 90 mol%, based on the total amount of the polyols (b), have a molecular weight of from 60 to 500 g/mol,
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- c) monomers other than the monomers (a) and (b), having at least one isocyanate group or at least one group which is reactive toward isocyanate

groups, and further carrying at least one hydrophilic group or one potentially hydrophilic group,

- 5        d)    if appropriate further compounds, other than the monomers (a) to (c),  
             having at least 2 isocyanate-reactive groups, of which at least one group is  
             a primary or secondary amino group or a mercapto group,
- 10       e)    if appropriate, monovalent compounds, other than the monomers (a) to (d),  
             having a reactive group which is an alcoholic hydroxyl group, a primary or  
             secondary amino group or an isocyanate group.
- 15       7.    The aqueous dispersion according to one of claims 1 to 6, wherein polymer II  
             has been synthesized from at least 40% by weight of principal monomers  
             selected from C1 to C20 alkyl (meth)acrylates, vinyl esters of carboxylic acids  
             containing up to 20 carbon atoms, vinyl aromatics having up to 20 carbon atoms,  
             ethylenically unsaturated nitriles, vinyl halides, vinyl ethers of alcohols containing  
             1 to 10 carbon atoms, aliphatic hydrocarbons having 2 to 8 carbon atoms and  
             one or two double bonds or mixtures of these monomers.
- 20       8.    A process for preparing an aqueous dispersion of a block copolymer comprising  
             a polyadduct or polycondensate (polymer I for short) on the one hand and a  
             polymer obtainable by free-radical addition polymerization (polymer II for short)  
             on the other, wherein
- 25       -    polymer I is obtainable by reaction of its starting compounds in miniemulsion,  
             -    one of the starting compounds of polymer I is an initiator of free-radical  
             addition polymerization, and  
             -    polymer II is prepared in the presence of said initiator.
- 30       9.    The process according to claim 8, wherein a miniemulsion is formed from the  
             starting compounds of polymer I and the monomers of polymer II and the  
             reaction of the starting compounds and monomers to form the block copolymer  
             takes place in miniemulsion.
- 35       10.   The process according to one of claims 8 or 9, wherein the miniemulsion has a  
             monomer droplet size of from 50 to 500 nm.
11.    The use of the aqueous dispersion according to one of claims 1 to 7 in coating  
             compositions, adhesives, impregnating compositions or sealants.